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1636

Box 5e

NEB-181

Patent's Docket No. _____

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: R. Vaisvila, et al.

Application No.: 09/689,343

Group No.:

Filed: October 12, 2000

Examiner:

For: Method for Cloning And Producing The MseI Restriction Endonuclease

#6a

Zita

4-5-02

Box Sequence

Assistant Commissioner for Patents

Washington, D.C. 20231

SUBMISSION OF "SEQUENCE LISTING," COMPUTER READABLE COPY,
AND/OR AMENDMENT PERTAINING THERETO
FOR BIOTECHNOLOGY INVENTION CONTAINING NUCLEOTIDE
AND/OR AMINO ACID SEQUENCE

(check and complete this item, if applicable)

- 1.
- ☒
- This replies to the Office Letter dated
- March 19, 2002

NOTE: If these papers are filed before the office letter issues, adequate identification of the original papers should be made, e.g., in addition to the name of the inventor and title of invention, the filing date based on the "Express Mail" procedure, the application number from the return post card or the attorney's docket number added.

- ☒
- A copy of the Office Letter is enclosed.

CERTIFICATION UNDER 37 C.F.R. §§ 1.8(a) and 1.10*
(When using Express Mail, the Express Mail label number is mandatory;
Express Mail certification is optional.)

I hereby certify that, on the date shown below, this correspondence is being:

MAILING

- ☒
- deposited with the United States Postal Service in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231

37 C.F.R. § 1.8(a)

37 C.F.R. § 1.10*

- ☒
- with sufficient postage as first class mail.

- ☐
- as "Express Mail Post Office to Addressee"

Mailing Label No. _____ (mandatory)

TRANSMISSION

- ☐
- transmitted by facsimile to the Patent and Trademark Office

Signature

Melissa A. Jackson

(type or print name of person certifying)

*WARNING: Each paper or fee filed by Express Mail must have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. § 1.10(b).

"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will not be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.

(Submission—Nucleotide and/or Amino Acid Sequence [9-37]—page 1 of 6)

IDENTIFICATION OF PERSON MAKING STATEMENT

2. I, Gregory D. Williams
(type or print name of declarant signing below)
state the following:

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ITEMS BEING SUBMITTED

3. Submitted herewith is/are:
(check each item as applicable)
- A. ☐ "Sequence Listing(s)" for the nucleotide and/or amino acid sequence(s) in this application. Each "Sequence Listing" is assigned a separate identifier as required in 37 C.F.R. § 1.821(c) and 37 C.F.R. §§ 1.822 and 1.823.
 - B. ☐ An amendment to the description and/or claims, wherein reference is made to the sequence by use of the assigned identifier, as required in 37 C.F.R. § 1.821(d).
 - C. ☒ A copy of each "Sequence Listing" submitted for this application in computer readable form, in accordance with the requirements of 37 C.F.R. §§ 1.821(e) and 1.824.
 - D. ☐ Please transfer to this application, in accordance with 37 C.F.R. § 1.821(e), the computer readable copy(ies) from applicant's other application identified as follows:
In re application of:
Application No.: 0 / Group No.:
Filed: Examiner:
For:

The Computer readable form(s) of applicant's other application corresponds to the "Sequence Identifier(s)" of the application as follows:

Computer Readable Form
(other application)

"Sequence Identifier"
(this application)

NOTE: "If the computer readable form of a new application is to be identical with the computer readable form of another application of the applicant on file in the Office, reference may be made to the other application and computer readable form in lieu of filing a duplicate computer readable form in the new application. The new application shall be accompanied by a letter making such reference to the other application and computer readable form, both of which shall be completely identified." 37 C.F.R. § 1.821(e).

- E. ☒ A statement that the content of each "Sequence Listing" submitted and each computer readable copy are the same, as required in 37 C.F.R. § 1.821(g).
- ☐ Because the statement is not made by a person registered to practice before the Office, the statement is verified as required in 37 C.F.R. § 1.821(b).
- F. ☒ Because this submission is made in fulfilling the requirement under 37 C.F.R. § 1.821(g), a statement that the submission includes no new matter.
- ☐ Because the statement is not made by a person registered to practice before the Office, the statement is verified, as required in 37 C.F.R. § 1.821(g).

**STATEMENT THAT "SEQUENCE LISTING"
AND COMPUTER READABLE COPY ARE THE SAME
AND/OR THAT PAPERS SUBMITTED INCLUDES NO NEW MATTER**

4. I hereby state:

(complete applicable item A and/or B)

- A. ☒ Each computer readable form submitted in this application, including those forms requested to be transferred from applicant's other application, is the same as the "Sequence Listing" to which it is indicated to relate.
- B. ☒ All papers accompanying this submission, or for which a request for transfer from applicants' other application, introduce no new matter.

STATUS

5. Applicant is

- ☒ a small entity. A statement:
- ☐ is attached.
- ☒ was already filed.
- ☐ other than a small entity.

(Submission—Nucleotide and/or Amino Acid Sequence [9-37]—page 3 of 6)

EXTENSION OF TERM

6.

NOTE: "Extension of Time in Patent Cases (Supplement Amendments)—If a timely and complete response has been filed after a Non-Final Office Action, an extension of time is not required to permit filing and/or entry of an additional amendment after expiration of the shortened statutory period.

If a timely response has been filed after a Final Office Action, an extension of time is required to permit filing and/or entry of a Notice of Appeal or filing and/or entry of an additional amendment after expiration of the shortened statutory period unless the timely-filed response placed the application in condition for allowance. Of course, if a Notice of Appeal has been filed within the shortened statutory period, the period has ceased to run." Notice of Dec. 10, 1985 (1061 O.G. 34-35).

NOTE: See 37 C.F.R. § 1.645 for extensions of time in interference proceedings and 37 C.F.R. § 1.550(c) for extensions of time in reexamination proceedings.

7. The proceedings herein are for a patent application and the provisions of 37 C.F.R. § 1.136 apply.

(complete (a) or (b) as applicable)

(a) ☐ Applicant petitions for an extension of time under 37 C.F.R. § 1.136 (fees: 37 C.F.R. § 1.17(a)(1)-(4)) for the total number of months checked below:

| Extension (months) | Fee for other than small entity | Fee for small entity |
|---------------------------------------|------------------------------------|-------------------------|
| <input type="checkbox"/> one month | \$ 110.00 | \$ 55.00 |
| <input type="checkbox"/> two months | \$ 390.00 | \$ 195.00 |
| <input type="checkbox"/> three months | \$ 890.00 | \$ 445.00 |
| <input type="checkbox"/> four months | \$ 1,390.00 | \$ 695.00 |

Fee: \$ _____

If an additional extension of time is required, please consider this a petition therefor.

(check and complete the next item, if applicable)

☐ An extension for _____ months has already been secured. The fee paid therefor of \$_____ is deducted from the total fee due for the total months of extension now requested.

Extension fee due with this request \$ _____

OR

(b) ☒ Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition for extension of time.

FEE PAYMENT

8. ☐ Attached is a ☐ check ☐ money order in the amount of \$ _____
- ☐ Authorization is hereby made to charge the amount of \$ _____
- ☐ to Deposit Account No. _____
- ☐ to Credit card as shown on the attached credit card information authorization form PTO-2038.

WARNING: Credit card information should not be included on this form as it may become public.

- ☐ Charge any additional fees required by this paper or credit any overpayment in the manner authorized above.

A duplicate of this paper is attached.

FEE DEFICIENCY

9.

NOTE: If there is a fee deficiency and there is no authorization to charge an account, additional fees are necessary to cover the additional time consumed in making up the original deficiency. If the maximum, six-month period has expired before the deficiency is noted and corrected, the application is held abandoned. In those instances where authorization to charge is included, processing delays are encountered in returning the papers to the PTO Finance Branch in order to apply these charges prior to action on the cases. Authorization to charge the deposit account for any fee deficiency should be checked. See the Notice of April 7, 1986, 1065 O.G. 31-33.

10. ☒ If any additional extension and/or fee is required, charge
- ☒ Deposit Account No. 14-0740
- ☐ Credit card as shown on the attached credit card information authorization form PTO-2038.

WARNING: Credit card information should not be included on this form as it may become public.

SIGNATURE(s)

Gregory D. Williams

(type or print name of person signing statement)

3/25/07

Date
32 Tozer Road
Beverly, MA 01915

P.O. Address of Signatory


Signature

(if applicable)

Telephone No. (978) 927-5054 X:292

Reg. No. 30901

Customer No.: 28986

- ☐ Inventor(s)
- ☐ Assignee of complete interest
- ☐ Person authorized to sign on behalf of assignee
- ☒ Practitioner of record
- ☐ Filed under Rule 34(a)
- ☐ Registration No. _____
- ☐ Other _____

(specify identity of declarant)

(complete the following, if applicable)

New England Biolabs, Inc.

(type name of assignee)

32 Tozer Road, Beverly, MA 01915

Address of assignee

Secretary

Title of person authorized to sign on behalf of assignee

A "STATEMENT UNDER 37 C.F.R. § 3.73(b)" is attached.

Assignment recorded in PTO on _____

Reel _____ Frame _____

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Reg. No.: 30901

Tel. No.: (978) 927-5054 X:292

Customer No.: 28986


SIGNATURE OF PRACTITIONER

Gregory D. Williams

General Counsel

(type or print name of practitioner)

New England Biolabs, Inc.

32 Tozer Road

P.O. Address

Beverly, MA 01915



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/689,343 | 10/12/2000 | Romualdas Vaisvila | NEB-181 | 7976 |

28986 7590 03/19/2002

NEW ENGLAND BIOLABS, INC.
32 TOZER ROAD
BEVERLY, MA 01915

EXAMINER

GUZO, DAVID

ART UNIT PAPER NUMBER

1636

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DATE MAILED: 03/19/2002

5

Please find below and/or attached an Office communication concerning this application or proceeding.



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: ASSISTANT COMMISSIONER FOR PATENTS

Washington, D.C. 20231

| | | | |
|---------------------------------|-------------|---|---------------------|
| APPLICATION NO./ CONTROL NO. | FILING DATE | FIRST NAMED INVENTOR / PATENT IN REEXAMINATION | ATTORNEY DOCKET NO. |
|---------------------------------|-------------|---|---------------------|

EXAMINER

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ART UNIT

PAPER

TECH CENTER 1600/2900

5

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

SEE ATTACHMENT -

Attachment

This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825 for the reason(s) set forth below or on the attached Notice To Comply With Requirements For Patent Applications Containing Nucleotide Sequence And/Or Amino Acid Sequence Disclosures and on the attached Raw Sequence Listing Error Report.

Applicant is given ONE MONTH, or THIRTY DAYS, whichever is longer, from the mailing date of this letter within which to comply with the sequence rules, 37 CFR 1.821 - 1.825. Failure to comply with these requirements will result in ABANDONMENT of the application under 37 CFR 1.821(g). Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a). In no case may an applicant extend the period for reply beyond the SIX MONTH statutory period. Direct the reply to the undersigned. Applicant is requested to return a copy of the attached Notice to Comply with the reply.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Guzo whose telephone number is (703) 308-1906. The examiner can normally be reached on Monday-Thursday from 8:00 AM to 5:30 PM. The examiner can also be reached on alternate Fridays.


Application/Control Number: 09/689,343
Art Unit: 1636

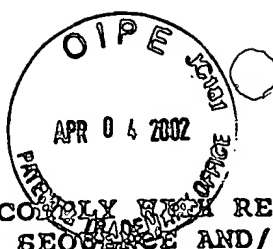
Page 3

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Irem Yucel, can be reached on (703) 305-1998. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-4242.

Any inquiry of a general nature or relating to the status of this application or proceeding or relating to attachments to this Office Action should be directed to Patent Analyst Zeta Adams whose telephone number is (703) 305-3291.

David Guzo
March 18, 2002


DAVID GUZO
PRIMARY EXAMINER



Applicants' Copy

Application No. 09/689343

NOTICE TO COMPLY WITH REQUIREMENTS FOR PATENT APPLICATIONS CONTAINING NUCLEOTIDE SEQUENCE AND/OR AMINO ACID SEQUENCE DISCLOSURES

The nucleotide and/or amino acid sequence disclosure contained in this application does not comply with the requirements for such a disclosure as set forth in 37 CFR 1.821 - 1.825 for the following reason(s):

☒ 1. This application clearly fails to comply with the requirements of 37 CFR 1.821 - 1.825. Applicant's attention is directed to these regulations, published at 1114 OG 29, May 15, 1990 and at 55 FR 18230, May 1, 1990.

☐ 2. This application does not contain, as a separate part of the disclosure on paper copy, a "Sequence Listing" as required by 37 CFR 1.821(c).

☐ 3. A copy of the "Sequence Listing" in computer readable form has not been submitted as required by 37 CFR 1.821(e).

☒ 4. A copy of the "Sequence Listing" in computer readable form has been submitted. However, the content of the computer readable form does not comply with the requirements of 37 CFR 1.822 and/or 1.823, as indicated on the attached copy of the marked-up "Raw Sequence Listing."

☐ 5. The computer readable form that has been filed with this application has been found to be damaged and/or unreadable as indicated on the attached CRF Diskette Problem Report. A substitute computer readable form must be submitted as required by 37 CFR 1.825(d).

☐ 6. The paper copy of the "Sequence Listing" is not the same as the computer readable form of the "Sequence Listing" as required by 37 CFR 1.821(e).

☐ 7.

Other: _____

Applicant must provide:

☒ An initial or substitute computer readable form (CRF) copy of the "Sequence Listing"

☒ An initial or substitute paper copy of the "Sequence Listing", as well as an amendment directing its entry into the specification

☒ A statement that the content of the paper and computer readable copies are the same and, where applicable, include no new matter, as required by 37 CFR 1.821(e) or 1.821(f) or 1.821(g) or 1.825(b) or 1.825(d)

For questions regarding compliance with these requirements, please contact:

For Rules Interpretation, call (703) 308-1123
For CRF submission help, call (703) 308-4212
For PatentIn software help, call (703) 557-0400

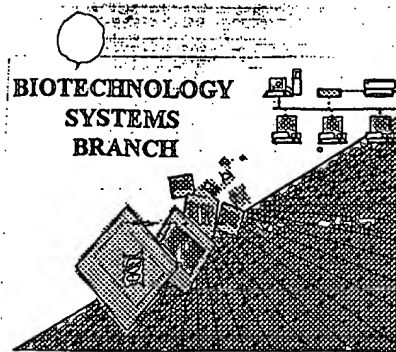
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Applicant Copy

RAW SEQUENCE LISTING
ERROR REPORT



04 CO

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) detected errors when processing the following computer readable form:

Application Serial Number: 09/689,343
Source: OIPE
Date Processed by STIC: 10/27/2000

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THE ATTACHED PRINTOUT EXPLAINS DETECTED ERRORS.

PLEASE FORWARD THIS INFORMATION TO THE APPLICANT BY EITHER:

- 1) INCLUDING A COPY OF THIS PRINTOUT IN YOUR NEXT COMMUNICATION TO THE APPLICANT, WITH A NOTICE TO COMPLY or,**
- 2) TELEPHONING APPLICANT AND FAXING A COPY OF THIS PRINTOUT, WITH A NOTICE TO COMPLY**

FOR CRF SUBMISSION QUESTIONS, PLEASE CONTACT MARK SPENCER, 703-308-4212.

FOR SEQUENCE RULES INTERPRETATION, PLEASE CONTACT ROBERT WAX, 703-308-4216.

PATENTIN 2.1 e-mail help: patin21help@uspto.gov or phone 703-306-4119 (R. Wax)

PATENTIN 3.0 e-mail help: patin30help@uspto.gov or phone 703-306-4119 (R. Wax)

TO REDUCE ERRORED SEQUENCE LISTINGS, PLEASE USE THE CHECKER VERSION 3.0 PROGRAM, ACCESSIBLE THROUGH THE U.S. PATENT AND TRADEMARK OFFICE WEBSITE. SEE BELOW:

Checker Version 3.0

The Checker Version 3.0 application is a state-of-the-art Windows based software program employing a logical and intuitive user-interface to check whether a sequence listing is in compliance with format and content rules. Checker Version 3.0 works for sequence listings generated for the original version of 37 CFR §§1.821 – 1.825 effective October 1, 1990 (old rules) and the revised version (new rules) effective July 1, 1998 as well as World Intellectual Property Organization (WIPO) Standard ST.25.

Checker Version 3.0 replaces the previous DOS-based version of Checker, and is Y2K-compliant. Checker allows public users to check sequence listings in Computer Readable form (CRF) before submitting them to the United States Patent and Trademark Office (USPTO). Use of Checker prior to filing the sequence listing is expected to result in fewer errored sequence listings, thus saving time and money.

Checker Version 3.0 can be down loaded from the USPTO website at the following address:

<http://www.uspto.gov/web/offices/pac/checker>



Raw Sequence Listing Error Summary

ERROR DETECTED SUGGESTED CORRECTION

SERIAL NUMBER: 09/689,343

ATTN: NEW RULES CASES: PLEASE DISREGARD ENGLISH "ALPHA" HEADERS, WHICH WERE INSERTED BY PTO SOFTWARE

- 1 ☐ Wrapped Nucleics
The number/text at the end of each line "wrapped" down to the next line.
This may occur if your file was retrieved in a word processor after creating it.
Please adjust your right margin to .3, as this will prevent "wrapping".
- 2 ☐ Wrapped Aminos
The amino acid number/text at the end of each line "wrapped" down to the next line.
This may occur if your file was retrieved in a word processor after creating it.
Please adjust your right margin to .3, as this will prevent "wrapping".
- 3 ☐ Incorrect Line Length
The rules require that a line not exceed 72 characters in length. This includes spaces.
- 4 ☐ Misaligned Amino Acid Numbering
The numbering under each 5th amino acid is misaligned. This may be caused by the use of tabs between the numbering. It is recommended to delete any tabs and use spacing between the numbers.
- 5 ☐ Non-ASCII
This file was not saved in ASCII (DOS) text, as required by the Sequence Rules.
Please ensure your subsequent submission is saved in ASCII text so that it can be processed.
- 6 ☐ Variable Length
Sequence(s) _____ contain n's or Xaa's which represented more than one residue.
As per the rules, each n or Xaa can only represent a single residue.
Please present the maximum number of each residue having variable length and indicate in the (ix) feature section that some may be missing.
- 7 ☒ PatentIn ver. 2.0 "bug"
A "bug" in PatentIn version 2.0 has caused the <220>-<223> section to be missing from amino acid sequence(s) 4. Normally, PatentIn would automatically generate this section from the previously coded nucleic acid sequence. Please manually copy the relevant <220>-<223> section to the subsequent amino acid sequence. This applies primarily to the mandatory <220>-<223> sections for Artificial or Unknown sequences.
- 8 ☐ Skipped Sequences (OLD RULES)
Sequence(s) _____ missing. If intentional, please use the following format for each skipped sequence:
(2) INFORMATION FOR SEQ ID NO:X:
(i) SEQUENCE CHARACTERISTICS: (Do not insert any headings under "SEQUENCE CHARACTERISTICS")
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:X:
This sequence is intentionally skipped

Please also adjust the "(iii) NUMBER OF SEQUENCES:" response to include the skipped sequence(s).
- 9 ☐ Skipped Sequences (NEW RULES)
Sequence(s) _____ missing. If intentional, please use the following format for each skipped sequence.
<210> sequence id number
<400> sequence id number
000
- 10 ☒ Use of n's or Xaa's (NEW RULES)
Use of n's and/or Xaa's have been detected in the Sequence Listing.
Use of <220> to <223> is MANDATORY if n's or Xaa's are present.
In <220> to <223> section, please explain location of n or Xaa, and which residue n or Xaa represents.
- 11 ☐ Use of <213> Organism (NEW RULES)
Sequence(s) _____ are missing this mandatory field or its response.
- 12 ☐ Use of <220> Feature (NEW RULES)
Sequence(s) _____ are missing the <220> Feature and associated headings.
Use of <220> to <223> is MANDATORY if <213> ORGANISM is "Artificial" or "Unknown"
Please explain source of genetic material in <220> to <223> section.
(See "Federal Register," 6/01/98, Vol. 63, No. 104, pp. 29631-32) (Sec. 1.823 of new Rules)
- 13 ☐ PatentIn ver. 2.0 "bug"
Please do not use "Copy to Disk" function of PatentIn version 2.0. This causes a corrupted file, resulting in missing mandatory numeric identifiers and responses (as indicated on raw sequence listing).
Instead, please use "File Manager" or any other means to copy file to floppy disk.

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OIPE

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/689,343

DATE: 10/27/2000
 TIME: 08:36:04

Input Set : A:\Web-181.app
 Output Set: N:\CRF3\10272000\I689343.raw

Does Not Comply
 Corrected Diskette Needed

pp 45

OK

3 <110> APPLICANT: VAISVILA, ROMUALDAS
 4 MORGAN, RICHARD D.
 5 KUCERA, REBECCA B.
 6 CLAUS, TOBY E.
 7 RALEIGH, ELISABETH A.
 9 <120> TITLE OF INVENTION: METHOD FOR CLONING AND PRODUCING THE MseI RESTRICTION
 10 ENDONUCLEASE
 12 <130> FILE REFERENCE: NEB-181
 14 <140> CURRENT APPLICATION NUMBER: US/09/689,343
 15 <141> CURRENT FILING DATE: 2000-10-12
 17 <160> NUMBER OF SEQ ID NOS: 9
 19 <170> SOFTWARE: PatentIn Ver. 2.0
 21 <210> SEQ ID NO: 1
 22 <211> LENGTH: 903
 23 <212> TYPE: DNA
 24 <213> ORGANISM: Micrococcus sp.
 26 <220> FEATURE:
 27 <221> NAME/KEY: CDS
 28 <222> LOCATION: (1)..(900)
 30 <400> SEQUENCE: 1
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 33 1 5 10 15
 35 gag gcg gac aac ctc gat ttc att caa acg ctc ccc gac gcg agc ttc 96
 36 Glu Ala Asp Asn Leu Asp Phe Ile Gln Thr Leu Pro Asp Ala Ser Phe
 37 20 25 30
 39 cga atg atc tac atc gat ccg ccg ttc aac aca ggg cga acg cag ccg 144
 40 Arg Met Ile Tyr Ile Asp Pro Pro Phe Asn Thr Gly Arg Thr Gln Arg
 41 35 40 45
 43 ctt cag tcg ctc aag acg acc cgc tcg gtc aca ggg tcg cga gtc ggc 192
 44 Leu Gln Ser Leu Lys Thr Thr Arg Ser Val Thr Gly Ser Arg Val Gly
 45 50 55 60
 47 ttc aaa ggc cag acg tac gac acg gtc aag agc act ctg cac tcg tat 240
 48 Phe Lys Gly Gln Thr Tyr Asp Thr Val Lys Ser Thr Leu His Ser Tyr
 49 65 70 75 80
 51 gac gac gct ttc acc gac tat tgg tcg ttc ctc gaa ccg cgt ctc ctg 288
 52 Asp Asp Ala Phe Thr Asp Tyr Trp Ser Phe Leu Glu Pro Arg Leu Leu
 53 85 90 95
 55 gag gct tgg cgg ttg ctc acc cct gac ggc gcg ctc tat ctt cat ctg 336
 56 Glu Ala Trp Arg Leu Leu Thr Pro Asp Gly Ala Leu Tyr Leu His Leu
 57 100 105 110
 59 gat tac cgc gag gtt cac tac gcc aag gtc gtc ctc gac gcg atg ttc 384
 60 Asp Tyr Arg Glu Val His Tyr Ala Lys Val Val Leu Asp Ala Met Phe
 61 115 120 125
 63 gga cgc gaa agc ttc ctg aac gag ctg atc tgg gcg tac gac tac ggc 432
 64 Gly Arg Glu Ser Phe Leu Asn Glu Leu Ile Trp Ala Tyr Asp Tyr Gly
 65 130 135 140

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 TECH CENTER 1600/2900

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/689,343

DATE: 10/27/2000

TIME: 08:36:04

Input Set : A:\Neb-181.app

Output Set: N:\CRF3\10272000\I689343.raw

```

67 gcg cgc tgc aag agc aag tgg ccc acc aag cac gac aac atc ctc gtg 480
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72 Tyr Val Lys Asp Pro Asn Asn Tyr Val Trp Asn Gly Gln Asp Val Asp
73 165 170 175
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76 Arg Glu Pro Tyr Met Ala Pro Gly Leu Val Thr Pro Glu Lys Val Ala
77 180 185 190
79 ctt ggc aag ctg ccc acc gac gtc tgg tgg cac aca atc gtt ccg cct 624
80 Leu Gly Lys Leu Pro Thr Asp Val Trp Trp His Thr Ile Val Pro Pro
81 195 200 205
83 gcg agc aaa gag cgc acc ggg tac gcg aca cag aag ccg gtc ggc atc 672
84 Ala Ser Lys Glu Arg Thr Gly Tyr Ala Thr Gln Lys Pro Val Gly Ile
85 210 215 220
87 atc cgt cgc atg att cag gcg agc agc aat gaa ggc gac tgg gtt ctg 720
88 Ile Arg Arg Met Ile Gln Ala Ser Ser Asn Glu Gly Asp Trp Val Leu
89 225 230 235 240
91 gat ttc ttc gct ggt agt ggg acg acc ggc gcc gcg gcc cgc cag ctc 768
92 Asp Phe Phe Ala Gly Ser Gly Thr Thr Gly Ala Ala Ala Arg Gln Leu
93 245 250 255
95 gga cgc cgt ttt gtg ctc gta gac gtc aac cca gaa gca atc gcg gta 816
96 Gly Arg Arg Phe Val Leu Val Asp Val Asn Pro Glu Ala Ile Ala Val
97 260 265 270
99 atg gca aaa cgg ttg gat gac ggg gca ttg gac acc agc gtg acg atc 864
100 Met Ala Lys Arg Leu Asp Asp Gly Ala Leu Asp Thr Ser Val Thr Ile
101 275 280 285
103 gtg cag act ccc cag agt gac cca cga acc gac gga tga 903
104 Val Gln Thr Pro Gln Ser Asp Pro Arg Thr Asp Gly
105 290 295 300
108 <210> SEQ ID NO: 2
109 <211> LENGTH: 300
110 <212> TYPE: PRT
111 <213> ORGANISM: Micrococcus sp.
113 <400> SEQUENCE: 2
114 Met Pro Ile Ser Thr Val Trp Thr Pro Asp Gly Asp Asp Leu Ile Val
115 1 5 10 15
117 Glu Ala Asp Asn Leu Asp Phe Ile Gln Thr Leu Pro Asp Ala Ser Phe
118 20 25 30
120 Arg Met Ile Tyr Ile Asp Pro Pro Phe Asn Thr Gly Arg Thr Gln Arg
121 35 40 45
123 Leu Gln Ser Leu Lys Thr Thr Arg Ser Val Thr Gly Ser Arg Val Gly
124 50 55 60
126 Phe Lys Gly Gln Thr Tyr Asp Thr Val Lys Ser Thr Leu His Ser Tyr
127 65 70 75 80
129 Asp Asp Ala Phe Thr Asp Tyr Trp Ser Phe Leu Glu Pro Arg Leu Leu
130 85 90 95
132 Glu Ala Trp Arg Leu Leu Thr Pro Asp Gly Ala Leu Tyr Leu His Leu
133 100 105 110

```

RAW SEQUENCE LISTING

DATE: 10/27/2000

PATENT APPLICATION: US/09/689,343

TIME: 08:36:04

Input Set : A:\Neb-181.app

Output Set: N:\CRF3\10272000\I689343.raw

```

135 Asp Tyr Arg Glu Val His Tyr Ala Lys Val Val Leu Asp Ala Met Phe
136      115      120      125
138 Gly Arg Glu Ser Phe Leu Asn Glu Leu Ile Trp Ala Tyr Asp Tyr Gly
139      130      135      140
141 Ala Arg Ser Lys Ser Lys Trp Pro Thr Lys His Asp Asn Ile Leu Val
142 145      150      155      160
144 Tyr Val Lys Asp Pro Asn Asn Tyr Val Trp Asn Gly Gln Asp Val Asp
145      165      170      175
147 Arg Glu Pro Tyr Met Ala Pro Gly Leu Val Thr Pro Glu Lys Val Ala
148      180      185      190
150 Leu Gly Lys Leu Pro Thr Asp Val Trp Trp His Thr Ile Val Pro Pro
151      195      200      205
153 Ala Ser Lys Glu Arg Thr Gly Tyr Ala Thr Gln Lys Pro Val Gly Ile
154      210      215      220
156 Ile Arg Arg Met Ile Gln Ala Ser Ser Asn Glu Gly Asp Trp Val Leu
157 225      230      235      240
159 Asp Phe Phe Ala Gly Ser Gly Thr Thr Gly Ala Ala Ala Arg Gln Leu
160      245      250      255
162 Gly Arg Arg Phe Val Leu Val Asp Val Asn Pro Glu Ala Ile Ala Val
163      260      265      270
165 Met Ala Lys Arg Leu Asp Asp Gly Ala Leu Asp Thr Ser Val Thr Ile
166      275      280      285
168 Val Gln Thr Pro Gln Ser Asp Pro Arg Thr Asp Gly
169      290      295      300
172 <210> SEQ ID NO: 3
173 <211> LENGTH: 1236
174 <212> TYPE: DNA
175 <213> ORGANISM: Unknown
177 <220> FEATURE:
178 <223> OTHER INFORMATION: Description of Unknown Organism: ENVIRONMENTAL DNA
180 <220> FEATURE:
181 <221> NAME/KEY: CDS
182 <222> LOCATION: (1)..(1233)
184 <400> SEQUENCE: 3
185 atg cct aca ctg gat tgg ccc ggt aaa cag tta agc ttc cca cca gct 48
186 Met Pro Thr Leu Asp Trp Pro Gly Lys Gln Leu Ser Phe Pro Pro Ala
187 1 5 10 15
189 acc tcc ttg cat ctg gag agt gtg gtc act gag gga gcg gag tca ccg 96
190 Thr Ser Leu His Leu Glu Ser Val Val Thr Glu Gly Ala Glu Ser Pro
191 20 25 30
193 cct aat cgt ctg att tgg gcg gac aac ctg ccg cta atg gta gat ttg 144
194 Pro Asn Arg Leu Ile Trp Ala Asp Asn Leu Pro Leu Met Val Asp Leu
195 35 40 45
197 ttg gcc gaa tat gaa ggg aaa atc gat ctg atc tac gcc gat ccc cct 192
198 Leu Ala Glu Tyr Glu Gly Lys Ile Asp Leu Ile Tyr Ala Asp Pro Pro
199 50 55 60
201 ttt ttt acg gat cgt act tat gcg gcg cga att ggt cat ggg gag gat 240
202 Phe Phe Thr Asp Arg Thr Tyr Ala Ala Arg Ile Gly His Gly Glu Asp
203 65 70 75 80

```


RAW SEQUENCE LISTING

DATE: 10/27/2000

PATENT APPLICATION: US/09/689,343

TIME: 08:36:04

Input Set : A:\Neb-181.app

Output Set: N:\CRF3\10272000\I689343.raw

```

205 tcg cgt cgt cca caa acc tgg cag ctt gca gaa gga tat acg gac gag 288
206 Ser Arg Arg Pro Gln Thr Trp Gln Leu Ala Glu Gly Tyr Thr Asp Glu
207      85      90      95
209 tgg aag gat tta gat gaa tac ctg gac ttc ctt tat cca cgc ctg gta 336
210 Trp Lys Asp Leu Asp Glu Tyr Leu Asp Phe Leu Tyr Pro Arg Leu Val
211      100      105      110
213 ctg atg tat cga ctg ctg gca cca cac gga acg ctc tac ttg cac ctg 384
214 Leu Met Tyr Arg Leu Leu Ala Pro His Gly Thr Leu Tyr Leu His Leu
215      115      120      125
217 gac tgg cac gcc aat gcc tac gta cgt gta ctg ctt gat gag atc ttc 432
218 Asp Trp His Ala Asn Ala Tyr Val Arg Val Leu Leu Asp Glu Ile Phe
219      130      135      140
221 ggg cga cag cgg ttt ctc aac gag atc gtc tgg atc tat cac ggc ccc 480
222 Gly Arg Gln Arg Phe Leu Asn Glu Ile Val Trp Ile Tyr His Gly Pro
223 145      150      155      160
225 tca gcc atc cga cgc gcc ttc aag cgc aaa cat gat acc atc ttg gtt 528
226 Ser Ala Ile Arg Arg Ala Phe Lys Arg Lys His Asp Thr Ile Leu Val
227      165      170      175
229 tat gtg aaa ggt gaa aac tat aca ttc aat gcg gat gcg gtt cgt caa 576
230 Tyr Val Lys Gly Glu Asn Tyr Thr Phe Asn Ala Asp Ala Val Arg Gln
231      180      185      190
W--> 233 cct tac cat ccg agc acg cat aag acc ttc gct tcc tcc ccg aag gcc 624
W--> 234 Phe Tyr His Pro Ser Xaa His Lys Thr Phe Ala Ser Ser Pro Lys Ala
235      195      200      205
237 ggc ttt ggt aag gtg ccg gat ctg cag cgc ggc aaa gtg ccc gaa gac 672
238 Gly Phe Gly Lys Val Pro Asp Leu Gln Arg Gly Lys Val Pro Glu Asp
239      210      215      220
241 tgg tgg tat ttt ccg gtc gtg gcc cgt cta cac cga gaa cgg agc ggc 720
242 Trp Trp Tyr Phe Pro Val Val Ala Arg Leu His Arg Glu Arg Ser Gly
243 225      230      235      240
245 tat ccg act caa aag cct caa gcc ttg ctg gag cgg atc ctg ctg gcc 768
246 Tyr Pro Thr Gln Lys Pro Gln Ala Leu Leu Glu Arg Ile Leu Leu Ala
247      245      250      255
249 tcc tcg aac gca ggc gat ctg gtg gca gac ttc ttc tgc ggc tca ggg 816
250 Ser Ser Asn Ala Gly Asp Leu Val Ala Asp Phe Phe Cys Gly Ser Gly
251      260      265      270
253 aca acc gct gtg gtg gca gcc cgt ctg gga cgg cgc ttc ctg gtc aac 864
254 Thr Thr Ala Val Val Ala Ala Arg Leu Gly Arg Arg Phe Leu Val Asn
255      275      280      285
257 gat gca agc tgg cgc gcc gtt cat gtg aca cgc aca cgc ttg cta cgc 912
258 Asp Ala Ser Trp Arg Ala Val His Val Thr Arg Thr Arg Leu Leu Arg
259      290      295      300
261 gag gga gta agt ttc act ttt gaa cgc cag gaa act ttt act cta cct 960
262 Glu Gly Val Ser Phe Thr Phe Glu Arg Gln Glu Thr Phe Thr Leu Pro
263 305      310      315      320
265 atc cag cca ctt cca cca gat tgg ttg atc atc gcc gag gag cag att 1008
266 Ile Gln Pro Leu Pro Pro Asp Trp Leu Ile Ile Ala Glu Glu Gln Ile
267      325      330      335
269 cgc ctc caa gca ccc ttt ctc gta gat ttt tgg gaa gtg gac gat caa 1056

```

→ see item 10 on
Err summary
sheet

RAW SEQUENCE LISTING

DATE: 10/27/2000

PATENT APPLICATION: US/09/689,343

TIME: 08:36:04

Input Set : A:\Neb-181.app

Output Set: N:\CRF3\10272000\I689343.raw

270 Arg Leu Gln Ala Pro Phe Leu Val Asp Phe Trp Glu Val Asp Asp Gln
 271 340 345 350
 273 tgg gat ggc aaa atc ttc cgc agc cgt cat caa ggc tta cgc tcc cgc 1104
 274 Trp Asp Gly Lys Ile Phe Arg Ser Arg His Gln Gly Leu Arg Ser Arg
 275 355 360 365
 277 ctt cag gag cag gcg ccg ctc tct cta cca ttg acc ggg aat gga ctg 1152
 278 Leu Gln Glu Gln Ala Pro Leu Ser Leu Pro Leu Thr Gly Asn Gly Leu
 279 370 375 380
 281 ttg tgt gta cgg gta gtg agc cgt gaa ggg gaa tac tat gag ttc aca 1200
 282 Leu Cys Val Arg Val Val Ser Arg Glu Gly Glu Tyr Tyr Glu Phe Thr
 283 385 390 395 400
 285 ggt cga gcc gat agc cct cac ccc gta tcg ttt tga 1236
 286 Gly Arg Ala Asp Ser Pro His Pro Val Ser Phe
 287 405 410

290 <210> SEQ ID NO: 4

291 <211> LENGTH: 411

292 <212> TYPE: PRT

293 <213> ORGANISM: Unknown

W--> 295 <220> FEATURE:

W--> 295 <223> OTHER INFORMATION:

295 <400> SEQUENCE: 4

296 Met Pro Thr Leu Asp Trp Pro Gly Lys Gln Leu Ser Phe Pro Pro Ala
 297 1 5 10 15
 299 Thr Ser Leu His Leu Glu Ser Val Val Thr Glu Gly Ala Glu Ser Pro
 300 20 25 30
 302 Pro Asn Arg Leu Ile Trp Ala Asp Asn Leu Pro Leu Met Val Asp Leu
 303 35 40 45
 305 Leu Ala Glu Tyr Glu Gly Lys Ile Asp Leu Ile Tyr Ala Asp Pro Pro
 306 50 55 60
 308 Phe Phe Thr Asp Arg Thr Tyr Ala Ala Arg Ile Gly His Gly Glu Asp
 309 65 70 75 80
 311 Ser Arg Arg Pro Gln Thr Trp Gln Leu Ala Glu Gly Tyr Thr Asp Glu
 312 85 90 95
 314 Trp Lys Asp Leu Asp Glu Tyr Leu Asp Phe Leu Tyr Pro Arg Leu Val
 315 100 105 110
 317 Leu Met Tyr Arg Leu Leu Ala Pro His Gly Thr Leu Tyr Leu His Leu
 318 115 120 125
 320 Asp Trp His Ala Asn Ala Tyr Val Arg Val Leu Leu Asp Glu Ile Phe
 321 130 135 140
 323 Gly Arg Gln Arg Phe Leu Asn Glu Ile Val Trp Ile Tyr His Gly Pro
 324 145 150 155 160
 326 Ser Ala Ile Arg Arg Ala Phe Lys Arg Lys His Asp Thr Ile Leu Val
 327 165 170 175
 329 Tyr Val Lys Gly Glu Asn Tyr Thr Phe Asn Ala Asp Ala Val Arg Gln
 330 180 185 190
 W--> 332 Pro Tyr His Pro Ser Xaa His Lys Thr Phe Ala Ser Ser Pro Lys Ala
 333 195 200 205
 335 Gly Phe Gly Lys Val Pro Asp Leu Gln Arg Gly Lys Val Pro Glu Asp
 336 210 215 220

see item 7 on Enn Summary Sheet

see item 10 on
Enn Summary
Sheet

VERIFICATION SUMMARY DATE: 10/27/2000
PATENT APPLICATION: US/09/689,343 TIME: 08:36:05

Input Set : A:\Neb-181.app
Output Set: N:\CRF3\10272000\I689343.raw

L:14 M:270 C: Current Application Number differs, Replaced Application Number
L:15 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:233 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3
L:234 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3
L:295 M:258 W: Mandatory Feature missing, <220> FEATURE:
L:295 M:258 W: Mandatory Feature missing, <223> OTHER INFORMATION:
L:332 M:258 W: Mandatory Feature missing, <221> not found for SEQ ID#:4
L:332 M:258 W: Mandatory Feature missing, <222> not found for SEQ ID#:4
L:332 M:340 W: (46) "n" or "Xaa" used: Feature required, for SEQ ID#:4
L:474 M:258 W: Mandatory Feature missing, <220> FEATURE:
L:474 M:258 W: Mandatory Feature missing, <223> OTHER INFORMATION: